

Name _____

Tuesday, November 30

Email _____

6.818 Fall 2021

Miniquiz #25

5 Minutes

Let set $P = \{000, 001, 010, 011, 100, 101, 110, 111\}$ and let the partial order $x \leq y$ be defined as:

$x \leq y$ if $(x \& y) = x$ where $\&$ denotes bitwise AND

The figure on the right shows the Hasse diagram of the lattice (P, \leq) .

1. What is the least upper bound of the set $\{101, 100, 001\}$?

2. What is the greatest lower bound of the set $\{101, 100, 001\}$?

3. Is this a complete lattice? If it is a complete lattice, describe how to compute the least upper bound and greatest lower bound of any subset of P . If it is not a complete lattice, specify a subset of P for which either a least upper bound or a greatest lower bound does not exist.

